

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
4 December 2003 (04.12.2003)

PCT

(10) International Publication Number
WO 2003/100561 A3

(51) International Patent Classification⁷: H04L 9/00

(US). WELLISCH, Gilbert; 994 Essex Court Way, #4, Midvale, UT 84047 (US).

(21) International Application Number:
PCT/US2003/015964

(74) Agents: LEBOWITZ, Henry, C. et al.; Pennie & Edmonds LLP, 1155 Avenue of the Americas, New York, NY 10036 (US).

(22) International Filing Date: 21 May 2003 (21.05.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/382,107 21 May 2002 (21.05.2002) US
60/394,999 10 July 2002 (10.07.2002) US
10/300,324 20 November 2002 (20.11.2002) US

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

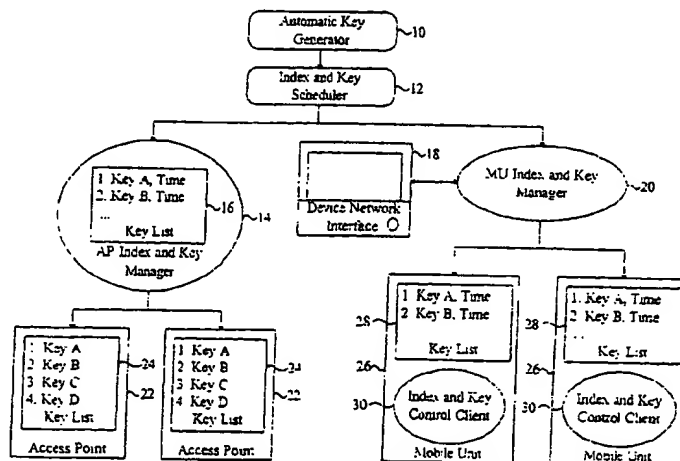
(71) Applicant: WAVELINK CORPORATION [US/US]:
11332 NE 122nd Way, Suite 300, Kirkland, WA 98034 (US).

(72) Inventors: WHELAN, Robert; 545 Kirkland Avenue, Kirkland, WA 98033 (US). VAN WAGENEN, Lamar; 980 E. Diana Hills Way, Sandy, UT 84094 (US). MORRIS, Roy; 8812 NE 191st Place, Bothell, WA 98011

Published:
— with international search report

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR PROVIDING WLAN SECURITY THROUGH SYNCHRONIZED UPDATE AND ROTATION OF WEP KEYS



Overall Key Update and Rotation Entity Relationships

(57) Abstract: A system and method are disclosed that overcome deficiencies of prior art IEEE 802.11 WEP key management schemes. Preferred embodiments of the present system and method update WEP keys (14) and rotate transmission key indices in a synchronized manner and on a frequent basis making it impractical for a hacker to gather sufficient network traffic using any one WEP key to decrypt that key and without disrupting communications. Preferred embodiments of the present system and method do not require changes in access point (22) or mobile unit hardware, radio drivers, or firmware and are therefore compatible with existing or legacy network infrastructure or components. The disclosed system and method may be used to facilitate secure communications between one or more access points and one or more mobile units (26) and/or groups of two or more mobile units engaging in peer-to-peer associations.

WO 2003/100561 A3



— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) Date of publication of the international search report:

12 February 2004

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/15964

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04L 9/00

US CL : 380/277

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 380/274,277,278,281,284,44,46,270

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y,P	US 6,453,159 B1(LEWIS) 17 September 2002 (17.09.2002), column 5, lines 37-66; column 6, lines 7-65; column 12, lines 53-63.	1-19
Y	US 6,078,663 A(YAMAMOTO) 20 June 2000 (20.06.2000), column 13, lines 17-37; column 20, lines 34-57.	1-19
A	US 6,167,137 A(MARINO et al) 26 December 2000 (26.12.2000), column 5, lines 37-56; column 7, lines 10-63.	1-19

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
E earlier application or patent published on or after the international filing date	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
O document referring to an oral disclosure, use, exhibition or other means	*Z* document member of the same patent family
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

13 November 2003 (13.11.2003)

Date of mailing of the international search report

02 DEC 2003

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Authorized officer

Ayaz Sheikh

Telephone No. 703-305-3900

Facsimile No. (703)305-3230

Form PCT/ISA/210 (second sheet) (July 1998)